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Exercise builds strong brains, too

By Nanci Hellmich, USA TODAY

Kids who play hard every day may be making their brains, as well as their bodies, stronger.

A new study reports that children who play vigorously for 20 to 40 minutes a day may be better able to organize schoolwork, do class projects and learn mathematics.

"Children who are not active may be at a disadvantage academically," says Catherine Davis, an associate professor of pediatrics at the Medical College of Georgia in Augusta. She presented the research last week at the annual meeting of the Obesity Society, a group of weight-loss professionals.

Davis and colleagues worked with 163 sedentary, overweight children, ages 7 to 11, for three months. The children were divided into three groups: a control group that did no physical activity after school; a group that did 20 minutes of vigorous physical activity five days a week after school; and a group that did 40 minutes of such activity on those same days.

The activity groups played intermittent, high-energy running games, such as flag tag, relays, jump rope and modified basketball. They wore heart-rate monitors and were given rewards for maintaining a high average heart rate. Students also were given cognitive-function tests at the beginning and end of the study. They were tested for their math and reading achievement and "executive function."

Executive function includes skills important for planning and organizing, focusing on schoolwork, resisting impulses, self-monitoring and using strategies to achieve goals. Children who have attention deficit disorder have difficulty with those tasks.

Among the findings from the National Institutes of Health-financed study:

• The children in the 40-minute activity group had significant improvement on an executive-function test compared with the control group. They increased about 4 points on a cognitive-performance scale. Those in the 20-minute group showed about half that improvement.

• There was a small improvement in math achievement for both exercise groups but no signs of improvement in reading.

• Those in the exercise groups lost about 1% to 2% of body fat.

The researchers also performed brain scans and found that the children who were exercising appeared to have more neural activity in the frontal areas of their brains, an important area for executive function, Davis says. "The animal literature tells us that exercise, particularly regular exercise, stimulates the growth of blood vessels and neurons in the brain, so we think the same may be happening in the children."

Other studies have shown that executive function improves in older adults who become more physically active, she says. "School systems need to know that to reach their achievement targets, they need to add physical activity to the school day rather than reduce it."

Phillip Tomporowski, a study co-author and exercise psychologist at the University of Georgia in Athens, says exercise "may well improve the underlying mental processes that are involved in a lot of behaviors and academic tasks."

Says Darla Castelli, assistant professor in the department of kinesiology and community health at the University of Illinois at Urbana-Champaign: "This research corroborates several of our studies, which have also examined executive function in kids. We found strong associations between math performance and aerobic fitness among elementary-school-age children."

Howell Wechsler, director of the Division of Adolescent and School Health for the Centers for Disease Control and Prevention, says some children don't have as many opportunities outside school to be as active as children in previous generations.

"Today there is so much more competition for their time with all the attractive options to be sedentary, from hundreds of cable stations to video games and computer games," Wechsler says. "This makes it even more important to have physical education programs and other opportunities for physical activity at school."